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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/575,488

09/15/2006

Sumio Komatsu

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7055 7590 09/28/2009  
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EXAMINER

USELDING, JOHN E

ART UNIT

PAPER NUMBER

1796

NOTIFICATION DATE

DELIVERY MODE

09/28/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com  
pto@gbpatent.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/575,488	<b>Applicant(s)</b> KOMATSU ET AL.	
	<b>Examiner</b> /JOHN USELDING/	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                        |                                                                   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/15/2006, 10/5/2007, 11/9/2007</u> .                         | 6) <input type="checkbox"/> Other: _____                          |



## **DETAILED ACTION**

### ***Claim Objections***

Claim 16 is objected to because of the following informalities: Applicant uses "seba cic" instead of "sebacic". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The use of the parenthesis in the claims is indefinite since it is unclear whether the words in the parenthesis are a part of the claim or not.

### ***Claim Interpretation***

Claims 2, 4, and 13 are product by process claims. Process limitations in product claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. "In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985). Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When

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the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, the *prima facie* case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d at 1255, 195 USPQ at 433. See also *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985).

It is also noted that claim 2 uses the word "obtainable" which does not require that the polyacetal resin is obtained through the claimed method. It only requires the polyacetal resin is "obtainable" using the claimed method. It is the position of the Office that any polyacetal resin is obtainable using the claimed method.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 8-15, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noritaka et al. (JP 2000-159850) in view of Mori et al. (WO 2001/51561).

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Regarding claims 1 and 2: Noritaka et al. teaches a polyacetal copolymer manufactured from copolymerization of trioxane, 1,3-dioxolane in the presence of a catalyst [0010], then subjected to heating the polyacetal copolymer in a range between the melting point of the copolymer and 260°C in the presence of a quaternary ammonium compound [0007,0008,0015] in an amount corresponding to that advocated in claim 2, which corresponds to the polymer and heat treatment conditions. Since the polymer of the prior art is manufactured from the same materials set forth in the specifications of the instant application, the resulting polymer would stand to have the same generation amount of formaldehyde as that of the instant application.

Noritaka et al. does not teach the use of a hydrazide compound.

Mori et al. however discloses the use of a hydrazide compound as a formaldehyde scavenger such as adipic acid hydrazide and oxalic acid hydrazide (page 12, lines 1-19), teaching that the resin composition preferably contains a formaldehyde scavenger in order to reduce the concentration of formaldehyde gas released from the polyacetal resin (page 11, lines 21-24). Mori et al. teach using 0.001 to 5% by weight of the formaldehyde scavenger (page 12, lines 20-23). As the objective of both inventions is to reduce the generation amount of formaldehyde in the polyacetal resin, it would have been obvious to one of ordinary skill in the art at the time of the invention to have included a hydrazide compound such as that taught by Mori et al. in the amount taught by Mori et al. in the invention disclosed by Noritaka et al to reduce formaldehyde generation.

Regarding claims 3 and 12: Noritaka et al. teaches wherein the polyacetal has a melting point of 155 to about 160°C [0024]. The range taught has sufficient specificity to anticipate the claimed range.

Regarding claims 4 and 13: Noritaka et al. teaches that the polymerization catalyst boron trifluoride is used [0012], and that the preferred range for these polymerization catalysts is between 5 ppm and 15 ppm [0013], which will achieve the instant claim of a concentration of residual fluorine of less than 13 ppm according to the applicant's specification [0045].

Regarding claims 5, 6, 14, and 15: Mori et al. teaches as an illustrative example adipic acid hydrazide, which corresponds to the applicant's claim in the instant where R<sup>5</sup> is represented by a C<sub>4</sub> hydrocarbon (page 12, lines 1-19). Furthermore, adipic acid hydrazide is one of the Applicant's preferred hydrazides and has a melting point above 160°C [0054].

Regarding claims 8 and 17: Noritaka teaches that for 100 parts of polyacetal, (A) 0.1 to 10 parts by mass of an antioxidant, a polymer or compound containing a formaldehyde reactive agent formic acid catching agent, a light stabilizer, or a mold release agent, (B) 0 to 60 parts of a reinforcing material, a conducting material, a thermoplastic, or a polyacetal resin, and (C) 0 to 5 parts of a paint may be used [0025].

Regarding claims 9-11 and 18-20: Noritaka et al. are silent about the emissions of formaldehyde. However, since the same measures are being taken to prevent formaldehyde emission (inclusion of the ammonium salt and hydrazide in corresponding quantities) the physical properties of the claims are intrinsically satisfied. Alternatively,

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the hydrazide used in the invention acts as a stabilizer and scavenger of formaldehyde, the emission amount of formaldehyde is dependent upon the amount of hydrazide used. Case law has held that "A particular parameter must first be recognized as a result-effective variable, i.e. a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. **In re Antonie**, 559 F.2d 618, 195 USPQ 6 (CCPA 1977), *MPEP 2144.05 IIB*. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to achieve the claimed emission amount through routine experimentation and thereby obtain the present invention.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noritaka et al. (JP 2000-159850) in view of Mitsuuchi et al. (5,212,222)

Regarding claims 1, 2, 5, 7, 14, and 16: Noritaka et al. teaches a polyacetal copolymer manufactured from copolymerization of trioxane, 1,3-dioxolane in the presence of a catalyst [0010], then subjected to heating the polyacetal copolymer in a range between the melting point of the copolymer and 260°C in the presence of a quaternary ammonium compound [0007,0008,0015], which corresponds to the polymer and heat treatment conditions. Since the polymer of the prior art is manufactured from the same materials set forth in the specifications of the instant application, the resulting polymer would stand to have the same generation amount of formaldehyde as that of the instant application.

Noritaka et al. does not teach the use of a hydrazide compound.



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Mitsuuchi et al. however discloses the use of sebacic hydrazide compound as a heat stabilizer and formaldehyde scavenger in polyacetal compositions (column 4, line 44; column 6, lines 15-31). Mitsuuchi et al. teach using 0.01 to 5 parts by weight of the sebacic hydrazide (column 6, lines 9-14). As the objective of both inventions is to stabilize and reduce the generation amount of formaldehyde in the polyacetal resin, it would have been obvious to one of ordinary skill in the art at the time of the invention to have included 0.01 to 5 parts by weight of sebacic hydrazide such as that taught by Mitsuuchi et al. in the invention disclosed by Noritaka et al to stabilize the composition and reduce formaldehyde generation.

Regarding claims 3 and 12: Noritaka et al. teaches wherein the polyacetal has a melting point of 155 to about 160°C [0024]. The range taught has sufficient specificity to anticipate the claimed range.

Regarding claims 4 and 13: Noritaka et al. teaches that the polymerization catalyst boron trifluoride is used [0012], and that the preferred range for these polymerization catalysts is between 5 ppm and 15 ppm [0013], which will achieve the instant claim of a concentration of residual fluorine of less than 13 ppm according to the applicant's specification [0045].

Regarding claims 6 and 15: sebacic hydrazide is the Applicant's most preferred hydrazide and has a melting point above 160°C [0054].

Regarding claims 8 and 17: Noritaka teaches that for 100 parts of polyacetal, (A) 0.1 to 10 parts by mass of an antioxidant, a polymer or compound containing a formaldehyde reactive agent formic acid catching agent, a light stabilizer, or a mold

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release agent, (B) 0 to 60 parts of a reinforcing material, a conducting material, a thermoplastic, or a polyacetal resin, and (C) 0 to 5 parts of a paint may be used [0025].

Regarding claims 9-11 and 18-20: Noritaka et al. are silent about the emissions of formaldehyde. However, the same measures are being taken to prevent formaldehyde emission (inclusion of the ammonium salt and hydrazide in corresponding quantities) the physical properties of the claims are intrinsically satisfied. Alternatively, since the hydrazide used in the invention acts as a stabilizer and scavenger of formaldehyde, the emission amount of formaldehyde is dependent upon the amount of hydrazide used. Case law has held that "A particular parameter must first be recognized as a result-effective variable, i.e. a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977), *MPEP 2144.05 IIB*. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to achieve the claimed emission amount through routine experimentation and thereby obtain the present invention.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to /JOHN USELDING/ whose telephone number is (571)270-5463. The examiner can normally be reached on Monday-Thursday 6:00am-4:30pm EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on 571-272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JOHN USELDING/  
Examiner  
Art Unit 1796

/Marc S. Zimmer/

Primary Examiner, Art Unit 1796